Commissioner for Patents

REMARKS/ARGUMENTS

Claims 1-9, 11-13, and 15-18 are now in the application.

Claims 1-9, 11-12, and 15-18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over FR patent application No. 2,739,658 to Broust in view of Applicant's Admitted Prior Art (AAPA).

As stated in MPEP section 706.02(j), to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Broust teaches a method to provide a bimetallic turbine shaft. As mentioned at page 2, line 31 - page 3, line 8, referring to Fig. 2 of Broust reproduced below:

"Ces deux parties 10 et 11 sont unies par une soudure de raccordement 16 circulaire. Le fût 10 peut, à titre d'exemple, être construit en un alliage appelé Maraging 300, qui est un alliage de fer complété en masse, de 0.01% de carbone, 18% de nickel, 9% de cobalt, 5% de molybdène, 0.7% de titane et 0.1% d'aluminium. Cet alliage a de bonnes propriétés de tenue à la torsion. Pour la partie d'extrémité 11, on propose du Maraging 250, c'est-à-dire un alliage de fer complété en masse de 0.02% de carbone, 18% de nickel, 8% de cobalt et 5% de molybdène, qui donne une résistance accrue à la fatigue."

Commissioner for Patents

Translation: "*These two parts 10 and 11 are joined by a circular tie-in weld 16. The leg 10 can, for example, be built with an alloy named Maraging 300, which is an iron alloy including by weight, 0.01% of carbon, 18% of nickel, 9% of cobalt, 5% of molybdenum, 0.7% of titanium and 0.1% of aluminum. This alloy has high properties of torsional strength. For the extremity part 11, we suggest Maraging 250, i.e. an iron alloy including by weight 0.02% of carbon, 18% of nickel, 8% of cobalt, and 5% de molybdenum, which provides an increased fatigue resistance.*"

Therefore, Broust is silent about titanium alloys and, more particularly, IMI834. Broust teaches solely how to weld two iron alloy shaft parts together to constitute a bimetallic turbine shaft.

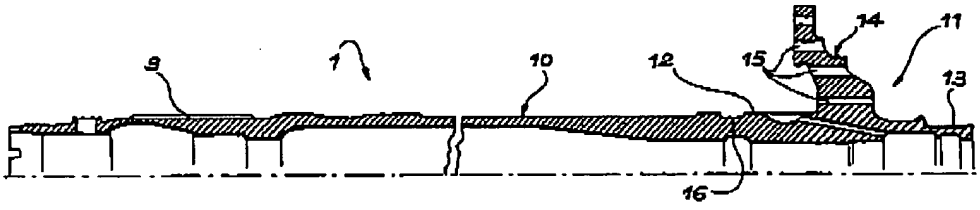

Figure 2 of Broust

The Applicant respectfully disagrees with the Office Action stating: "Broust teaches a gas turbine compressor having a stump portion, with the axis of rotation the stump portion extending from the back face and a metal stub shaft by friction welding...". As mentioned above, the two parts welded together constitute the shaft 1 of a turbine. The first part is a leg 10 which extends along almost all the shaft length from the splines 6 up to the extremity part 11, adjacent to the low pressure turbine 3 (page 2, lines 24-23). The second part is the extremity part 11 which carries the bearing holder surfaces 12 and 13 and a flange 14 drilled with bolt holes 15 for fastening to the turbine 3. The flange 14 is neither an impeller with a stump portion, nor an impeller blank with a stump portion. The flange is a small component, relatively to an impeller, to which the turbine 3 is fastened, as shown in Fig. 1. The flange 14 is not an aerodynamic component adapted to be driven by a

Commissioner for Patents

fluid flow. Flange 14 does not use fluid flow energy in order to generate a rotary motion. Therefore, flange 14 cannot be construed as an impeller. . Nothing in Broust suggests its applicability beyond shafts.

Moreover, the Applicant respectfully disagrees with the Office Action stating Broust's turbine compressor has a stump portion (figure 2, item 16). As clearly mentioned at page 2, lines 24-33 (translated below):

Translation: "*The shaft 1, better seen in Figure 2, is composed of a leg 10 which extends on almost all its length from the splines 9 towards the turbomachine downstream up to an extremity part 11 adjacent to the low pressure turbine 3 and which carriesspecifically surfaces 12 and 13 of the bearing holders 6 and 7 and a flange 14 drilled with bolt holes 15 for fastening to the turbine 3. These two parts 10 and 11 are joined by a circular tie-in weld 16.* "

Item 16 is a circular tie-in weld which joins together two parts of the shaft 1. The second part of the shaft 1, i.e. the extremity part, is clearly not an impeller blank provided by forging IMI834.

Therefore, Broust teaches a bimetallic turbine shaft manufacturing technique, and nothing else - Broust discloses no other part or application for his process. In other words, in order for the 103 rejection based on Broust to stand, the Examiner's position must be that, *prima facie*, it is well known to the skilled artisan that processes applicable to welding together two shaft parts are identical or analogous to attaching shafts to impellers and that shafts are subjected to similar stress to impellers. However, Applicant suggests that this contention is strained, at best, and to be sustainable, evidence in support is required. Applicant respectfully submits that a person of ordinary skill in the art will appreciate that the constraints applied to a shaft attached to an impeller are quite different than the ones applied to two shaft parts connected together, even if one part of the shaft carries a flange.

Commissioner for Patents

Broust teaches no such link. Without such evidence, the *prima facie* obviousness is not established and the rejection should be withdrawn.

Moreover, there is no suggestion or motivation to combine the teaching of Broust and the AAPA since they address different technical problems: providing a bimetallic turbine shaft versus providing a functional impeller, including a forged blank made of IMI834 and a stub shaft. Again, if it is contended that the arts of joining shaft parts together and attaching shafts to rotors are analogous, Applicant suggests that evidence supporting this contention be provided to sustain the rejection.

Consequently, rejection of claims 1, 8, and 18 is improper and should be withdrawn. Claims 2-7, 9, 11-13, and 15-17 which depend on claims 1 and 8 are also inventive.

In view of the foregoing, withdrawal of the rejection of claims 1-9, 11-13, and 15-18 is respectfully requested. In the event that there are any questions concerning this amendment or the application in general, the Examiner is respectfully urged to telephone the undersigned so that prosecution of this application may be expedited.

Respectfully submitted,
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Date